

non for the origin of new species, but the origin of which character is as mysterious as the origin of a species itself!

Dr. Wallace affirmed that "no other agency" than "natural selection" has been shown as a probable cause of specific characters—and therefore of species. Possibly not. But if an asserted cause (X) has been shown to be incapable of producing a certain effect, it is no use to say: "It must be (X) because you cannot bring forward any definite (not X) as efficient to produce that effect." Surely it is enough to reply: "The cause you assert is insufficient, and we must therefore still remain in an attitude of doubt and expectancy."

Dr. Wallace, however, in his recent paper did admit that the distinctive characters of some exceptional species might not have been due to "utility" or "natural selection"; but such an admission seems to me a fatal one, for if an unknown cause may have given origin to some species, why may not such cause have been the really efficient agent in the production of all species?

But Dr. Wallace years ago made (and he has never since repudiated his act) a truly important exception to the action of "natural selection."

A survey of the organic world cannot certainly be a scientific one if the highest of animals (man) be left out of the account, nor can man be said to be scientifically treated if his highest characteristics be altogether neglected.

Dr. Wallace cannot be accused of such neglect, and therefore with a survey of the organic world thus scientifically defective. Taking account of man's highest intellectual powers, he has declared that "natural selection" must have been incompetent to produce them, and agreed with me in the conviction that they require some further and higher explanation.

A recent number of NATURE has contained a review of Prof. Weismann's paper read at Leyden. Therein, that ardent Darwinian appears to have made several notable concessions which bear upon the question treated by Dr. Wallace. One of these is that "mimicry" cannot be accounted for by accidental, individual variation; he appears to say the same concerning certain co-adjustments of instinct and structure, and he fully concedes the truth asserted by Mr. Herbert Spencer and by myself—the truth, namely, that *panmixia* cannot explain the annihilation of rudimentary organs.

He, however, reaffirms his dictum that the idea of "teleological contrivances is inadmissible in science." But why? Who can deny to reason its right to investigate truth on all sides, and affirm that which appears to be evidently true with respect to any, including vital, processes? I adhere to the pronouncement of the world-renowned John Müller: "Physiology is no true science if not in intimate union with philosophy." Once more I must urge that man and his highest intellectual powers cannot be excluded from a scheme of nature which is truly scientific. Man has intelligence, and acts more or less frequently with intelligent purpose—"teleological contrivance"—and he exists in a universe which, as a whole, can never have been submitted to the action of "natural selection." The universe, therefore, even if eternal, cannot have unreason for its cause, or any power devoid of intelligence and purpose.

I believe the indisposition to accept such truths as a part of science is largely due to our common tendency to permit the intellect to be fettered by the imagination, thus giving rise to anthropomorphic mental images, the absurdity of which is assumed also to belong to those intellectual conceptions with which they have infinitely less to do than have the signs of the zodiac with the coherence of the solar system.

Salisbury-by-the-Sea, June 29.

ST. GEORGE MIVART.

"The Reminiscences of a Yorkshire Naturalist."

WHEN reading this very interesting record of my old friend and colleague (of which you gave such an excellent review in your issue of June 25), I found that, in his recollections of the days when we were both professors at the Owens College, Manchester, Dr. Williamson has been mistaken as to the details of Principal Scott's retirement. Mr. J. Holme Nicholson (late Registrar of this College) confirms my memory as to dates, and, at Mrs. Williamson's request, I ask you to kindly insert, in your forthcoming number, the following correction in her late husband's graphic account of the early struggles through which Owens College had to pass on the way to its present high position as an institution for sound instruction in natural science and original research.

At page 140 of the "Reminiscences," there occurs the following passage: "Dr. Scott's resignation (May 28, 1857) robbed Manchester of a man of rare culture, and his death a few months later is said to have taken from the world more Dantesque learning than was left behind." There are two errors in this passage: in the first place, Dr. Scott did not sever his connection with Owens College in 1857; he resigned his principalship, but not his chairs of Logic, Moral and Mental Philosophy, and of Comparative Grammar and English Language and Literature, which he continued to hold until his death. Secondly, he died on January 12, 1866, and therefore not a few months, but nearly nine years after his resignation of the principalship. Consequently, it is a mistake to infer that Manchester was robbed of his presence and the advantages of his learning in 1857.

This correction is the more important because Dr. Williamson's words, above quoted, and their context, seem to convey, I am sure quite unintentionally, the impression that Dr. Scott's death was hastened by his resignation of the principalship; whilst, on the contrary, his relief from one of his many arduous duties probably prolonged his interesting and valuable life.

E. FRANKLAND.

The Tsetse Fly.

IN the excellent review of the Tsetse fly-disease, which appeared in NATURE of April 16, Mr. Walter F. H. Blandford accepts with some reserve the observation made by Dr. David Bruce, that the fly is *viviparous* "as the fly has not yet been bred from the puparium."

I pointed out to Dr. Bruce, while he was investigating the disease, that, with the systematic arrangement of Diptera now followed, I could hardly conceive the *Glossina* being viviparous; and I suggested the possibility of another fly being taken for the Tsetse. Dr. Bruce has not only been most emphatic in his reassertion, but I have myself since bred from three puparia, sent by him for that purpose, what is most certainly *Glossina morsitans*, Westwood.

L. PÉRINGUEY.

South African Museum, Cape Town, June 15.

MY hesitation in accepting unreservedly Dr. Bruce's account of the reproduction of *Glossina* was due to a suspicion, not that he had mistaken some other fly for it, but that the extruded larvæ might turn out to be those of a parasitic form, probably Tachinid. Mr. Péringuey's letter is most welcome as supplying the final proof of an extremely important fact, both economically and zoologically, in the insect's life-history.

There is much variety in the larval life of *Muscidae*; and in *Stomoxys*, the genus most nearly allied to *Glossina*, the larvæ are normally scatophagous, but that of *S. calcitrans* has been occasionally found mining the leaves of burdock, coltsfoot and deadly nightshade.

Unfortunately, till proof is complete that Nagana is contracted under natural conditions from Tsetse-infection only, which is as yet far from being the case, we cannot console ourselves with the idea that the progressive extinction of African wild game must soon render the disease a thing of the past.

July 6.

WALTER F. H. BLANDFORD.

The Salaries of Science Demonstrators.

I SHOULD be glad if you would allow me the opportunity of endorsing Dr. Baker's protest contained in his letter in your issue of July 2, against the totally inadequate salaries offered by University Colleges to demonstrators and assistant lecturers in science.

Taking the subject of chemistry only: on looking over the official returns for the year 1893-4, made by eight of the University Colleges participating in the Treasury grant of £15,000, it will be seen that whereas the average salary paid to the professor is over £700, that of the assistant lecturers and demonstrators is under £150, and in several cases below £100 per annum.

No one acquainted with what is required of them will maintain that the professors are overpaid, but all must admit that the remuneration of the lecturers and demonstrators is absurdly out of proportion.

Compare for a moment the work done by the two classes of teachers. The occupant of a chair of Chemistry in a University

College is too often bound down by the exigencies of examinations to the delivery of certain set lecture courses, and these, together with his own researches and the performance of the many administrative duties that fall to his lot, occupy almost the whole of his time. Let him possess the master-mind of a Hofmann, his hurried visits to his laboratory afford comparatively slight opportunity for the exercise of its full effect on the student. The demonstrator, on the contrary, bears the brunt of the difficult and harassing tutorial work in his close contact with the student in the laboratory, and upon the demonstrator's ability and manner of teaching will depend, in great measure, the student's future style of work. For this a grateful University College gives him rather less than it pays to its janitor, and much less than half the amount received by its travelling dairy-maid!

I am afraid that the cause of this very real injustice will be found, in part, in the influence of our older universities, where until recently lectures were everything and practical work was naught. Members of these universities on college councils still seem to cling to the old idea, and the majority of the remaining members, probably excellent men of business or affairs, have somewhat hazy notions of scientific educational work; the Professors, who alone of the teaching staff obtain representation on the governing body, are, after all, but human, and can scarcely be expected to labour to disabuse them.

I fear that, as a body, demonstrators and lecturers are scarcely influential enough to approach the Chancellor of the Exchequer with a view to his imposing such conditions that the renewal of the Treasury grant shall be made to depend upon the redress of their wrongs; still the injustice of their treatment is undeniable, and perhaps some of your readers can suggest a remedy.

SAVILLE SHAW.

A Solar Halo.

SHORTLY after 7 o'clock in the evening of July 2, a solar halo was observed from Putney Bridge, West London.

The appearance consisted of portions of the inner halo (22° from the sun) situated just at the same height above the horizon as the sun. The halo was of a distinct red on the inside of the circle, followed by yellow and by a faintly bluish white light on the outside. There was also a faint parhelion on the right side, just outside of the halo.

Above the sun, at a point where the vertical through the sun would have cut the circular halo, there was, instead of the latter, an inverted arch of somewhat hyperbolic shape, the arms of the hyperbola extending upwards and enclosing an angle greater than a right angle. The faint prismatic colours of this arch were placed so that the red was nearest to the sun, and the apex of the inverted arch must have been 22° distant from the sun. The height of the sun above the horizon was estimated to be about 14° , and the phenomenon lasted ten minutes after it had been first observed. The sky was somewhat cloudy.

West Kensington.

H. WARTH.

An Optical Illusion.

WHILE doing some photographic work with a light from a Welsbach burner, which shone through a small ground glass window in a dark-room, I noticed that when a lamp emitting red rays from its vertical sides was placed in a position so that its top was illuminated by the white light from the window, and while in this light it was then moved by hand to and fro in a horizontal plane, the top appeared to be loose, or displaced in opposite directions to the red sides. The top was of bright tin and its surface sufficiently irregular to cast slight shadows, which rendered the effect very marked.

This illusion is no doubt due to a physiological action at the retina, in which the impression produced by the white or grey light persists longer than that from the red, causing an apparent lag of the top. The persistency may be still further accounted for when the fact is borne in mind that the lag could only be obtained with weak lights in a dark-room, and therefore with the pupil of the eye largely expanded, and in consequence a relative increase of intensity of the white over the red light upon retinal areas of different sensibility.

Lamp-light or daylight can be used instead of a Welsbach. I found it convenient to vary the intensity and colour of the lights by superposing sheets of coloured tissue-papers.

New Rochelle, N.Y.

F. H. LORING.

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Food of Chameleons.

I do not know whether you care to insert a modest natural history communication, for I apprehend but few of your readers are country naturalists. If you do, it is to this effect.

It is not easy to keep chameleons alive long in this country, owing to the difficulty of procuring their proper diet.

I am keeping a Madagascar one, and he thrives very well. The food he seems to prefer to all other is the common green fly with a metallic lustre; these he takes at once in preference to the finest bluebottles, and when he protrudes his curious long tongue, armed with some glutinous matter, the direction is unerring, and woe to the fly. The chameleonic colour changes are most interesting.

E. L. J. RIDSDALE.

Rottingdean.

Röntgen Rays.

MANY tubes for Röntgen ray researches have the edge of the kathode mirror opposite the short neck, and in such cases the expedient described by Mr. Porter in your issue of the 18th ultimo, can very easily be carried out by fitting an india-rubber ring on this neck, winding two coils of copper wire round it, and leaving two or three inches free at one end, which is then bent so as to bring the point sufficiently near to the kathode loop.

An application of the Röntgen rays has been made in the small local museum here, which promises to make it more generally attractive and useful. Skiagrams of suitable specimens have been taken, and prints from these placed alongside the specimens, so that their external form and the bony structure which supports it may be compared at a glance.

Keith, N.B., July 3.

ALEX. THURBURN.

A Curious Connection.

IF new, perhaps the following fact, observed by me, may be worth publishing. In my kitchen I have a mantle on the gas-burner. At present the mantle is in a dilapidated state, and the light defective. I find, however, that, when the water-tap over the kitchen sink is running, the light greatly increases in brilliancy, maintaining that brilliancy as long as the water is running.

MARGARET McEVoy.

THE INTERNATIONAL CATALOGUE CONFERENCE.

THE International Conference organised by the Royal Society to consider the preparation and publication of an International Catalogue of Scientific Literature was opened in the apartments of the Society at Burlington House on Tuesday. Upon the importance of such a catalogue it is unnecessary to comment here. The Royal Society has steadily attacked the problem of recording and indexing scientific literature, since the middle of this century, when the great author-index was commenced. More than thirty years ago the Council of the Society resolved that the catalogue according to authors should be followed by an index according to subjects, and a start was made in 1893. But, as Lord Kelvin pointed out in his last anniversary address, "the continuation of such a work was almost beyond the resources of the Royal Society, and therefore about two years ago a Committee was appointed to take into consideration a suggestion that the preparation of complete indexes should be effected by international co-operation." The conference now being held is the outcome of this conclusion. Only by securing international co-operation could such a work as that contemplated by the Royal Society be satisfactorily carried out. It is therefore a matter of extreme congratulation that the proposal has been so warmly supported by Governments and Scientific Societies in all parts of the world, as shown by the distinguished men who have been delegated to take part in the conference. The enterprise is one in which all men of science are interested, but of the magnitude of which it is only possible to have a faint conception. To develop a comprehensive and practicable scheme will be a difficult task, but with a conference constituted like that now